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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,633	12/09/2003	Toshikazu Hamamoto	054160-5015-02	4718

7590 12/15/2004

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EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/731,633

Applicant(s)

HAMAMOTO ET AL.

Examiner

Tracy Dove

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/9/03</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Information Disclosure Statement*

The information disclosure statement (IDS) submitted on 12/9/03 has been considered by the examiner.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato, JP 09-082360, as evidenced by Linden, Handbook of Batteries.

Kato teaches a nonaqueous electrolyte secondary battery comprising a positive electrode, a negative electrode and an electrolyte (0019). The electrolyte includes an electrolyte salt and a nonaqueous solvent. The salt may be LiBF<sub>4</sub> and the solvent may be ethylene carbonate, propylene carbonate, butyrolactone, dimethyl carbonate, diethyl carbonate or mixtures thereof (0046-0048). A compound which forms a layer on the positive electrode is added to the electrolyte (0039). An electrolyte comprising 10 wt% of the compound is prepared by adding 20 wt% of a vinyl sulfone to the electrolyte solution (see NIST printout that states “vinyl sulfone” is another name for “divinyl sulfone”). The negative electrode material may be coke or graphite (0044-0045). Coke has an interlayer spacing d<sub>002</sub> of 0.346 and graphite has an interlayer spacing d<sub>002</sub> of

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0.334-0.335 nm. This is evidenced by Linden, Handbook of Batteries, at Table 36.3 on page 36.6

Thus the claims are anticipated.

\*

Claims 18-34 are rejected under 35 U.S.C. 102(a) as being anticipated by Hamamoto et al., JP 11-329494.

Hamamoto teaches an electrolytic solution for a lithium secondary battery wherein the electrolytic solution includes an electrolyte dissolved in a nonaqueous solvent and a vinyl sulfone derivative of the formula shown in the abstract. In the formula R may be an alkyl group or an alkenyl group. The sulfone derivative may be a divinyl sulfone (paragraph 0013). The vinyl sulfone derivative is 0.1-10 wt% of the electrolytic solution (paragraph 0014). The various solvents and electrolyte of the instant claims are disclosed in paragraphs 0015-0018. The lithium battery includes a positive electrode and a negative electrode wherein the negative electrode includes graphite having a (d002) spacing of the (002) plane of 3.35-3.40Å (0.335-0.340 nm). See paragraph 0022. Hamamoto has a specific teaching of an electrolytic solvent mixture comprising propylene carbonate and dimethyl carbonate (paragraph 0024). See also Table 1.

Thus the claims are anticipated.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285.

The examiner can normally be reached on Monday-Thursday (9:00-7:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Tracy Dove', is positioned above the printed name and title.

Tracy Dove  
Patent Examiner  
Technology Center 1700  
Art Unit 1745

December 12, 2004